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The Mind and Matter podcast explores the intersection of science, health, and metabolism to help listeners understand how their bodies react to what they consume. The host, who holds a PhD in neuroscience with a focus on neuroendocrinology and genetics, uses his academic background to translate complex scientific information into actionable insights. This episode features a conversation with Ashley, a mechanical engineer who transitioned into farming after experiencing significant personal health challenges.

The Transition from Engineering to Regenerative Farming

Ashley's interest in health began during her doctoral studies when she suffered from extreme digestive issues, chronic fatigue, and Raynaud's syndrome in her early 20s. Frustrated by the limitations of the pharmaceutical model, she began researching metabolic health and discovered the work of Dr. Ray Peat. His research on the potential dangers of polyunsaturated fatty acids (PUFAs) and the benefits of traditional saturated fats challenged mainstream nutritional advice.

This shift in perspective led Ashley to conclude that the industrialization of the food system over the last century was a primary driver of modern health issues. After completing her PhD, she chose to become a farmer rather than a professor, driven by the belief that how food is raised directly impacts human health. She eventually co-founded Nourish Food Club to create an alternative food system focused on lowering PUFA intake by being intentional about livestock feed.

The Evolution of the Modern Food System

A century ago, soy was not a significant part of the agricultural landscape. Its rise as a staple crop was facilitated by monocropping and government subsidies that incentivized mass production. Historically, soybean oil and linseed oil were primarily used in industrial applications, such as paint and varnishes, due to their high PUFA content and tendency to oxidize.

The shift toward using these oils in food began after World War II, when manufacturing plants used for chemical warfare were repurposed to produce agricultural pesticides. Companies like Monsanto developed genetically modified crops that were resistant to these chemicals, allowing for the high-volume production of soy and corn. Simultaneously, a growing fear of saturated fats led the industry to promote vegetable oils as heart-healthy alternatives.

The Biological Impact of Livestock Feed

What an animal eats determines the nutritional and fatty acid composition of the products it yields. For example, the fats in a chicken's diet are deposited directly into its eggs. Most conventional and even organic pasture-raised chickens are fed a diet consisting of 70 to 90 percent grain, which is typically high in soy and corn byproducts.

These feeds introduce several problematic variables into animal products:

1. Polyunsaturated Fatty Acids: High levels of linoleic acid can disrupt the gut lining and damage structures like the villi, potentially leading to leaky gut.
2. Phytoestrogens: Soy is a significant source of phytoestrogens, which can transfer into egg yolks and disrupt human endocrine signaling.
3. Pesticides: Non-organic soy is often heavily treated with glyphosate and other chemicals that end up in the finished food product.

Ashley's farm cooperative uses a low-PUFA feed that results in eggs with 73 percent less linoleic acid than standard organic pasture-raised eggs. By removing soy and corn from the feed, many consumers who previously suffered from egg-related allergies or digestive distress have found they can tolerate these low-PUFA alternatives.

Metabolic Health and the Hibernation Effect

Research suggests a strong link between high PUFA consumption and declining metabolic rates in humans. Data from Dr. John Speakman's lab indicates a documented decline in average human body temperature and basal metabolic rate (BMR) over the last century. In nature, animals like squirrels consume PUFA-rich nuts specifically to slow their metabolism and enter hibernation.

On a cellular level, PUFAs encourage glycolytic metabolism, or fermentation, which is less efficient than oxidative phosphorylation. This shift results in lower ATP production and causes the body to store fuel as fat rather than burning it for heat. This biological mechanism is used in industrial farming to fatten pigs and chickens more quickly, and it appears to have a similar obesogenic effect on humans.

The Dangers of Pesticides and Glyphosate

Glyphosate is the most common pesticide used in modern agriculture, and its safety is a subject of significant debate. While regulators claim it is safe because humans lack the Shikimate pathway it targets, this pathway is present in human gut bacteria. Exposure to glyphosate can cause gut dysbiosis by killing beneficial bacteria while allowing pathogenic strains to thrive.

Furthermore, glyphosate has been shown to inhibit energy production in the mitochondria and act as a chelating agent that prevents the body from absorbing essential minerals like magnesium and zinc. It also breaks down into toxic metabolites that can drive neuroinflammation and neurodegeneration. Choline, a nutrient primarily found in animal products, is required for the body to detoxify these metabolites, making those on plant-based diets potentially more vulnerable to pesticide-induced inflammation.

The Case for Raw Dairy and Traditional Fats

Returning to traditional food sources can help restore metabolic health. Raw dairy, in particular, contains beneficial compounds that are often destroyed by pasteurization. One such compound is lactoferrin, a heat-sensitive protein with anti-inflammatory and antimicrobial properties that also helps regulate iron levels.

Raw dairy also provides living enzymes and probiotics that support gut health and aid digestion. For individuals with a lowered metabolic rate, these enzymes can be particularly helpful since internal enzyme activity is temperature-dependent and drops significantly with even a slight decrease in body temperature. Historically, the milk cure was used by doctors to treat various chronic ailments, highlighting the therapeutic potential of high-quality raw milk.

Practical Steps for Consumers

Achieving optimal metabolic health is a long-term process. The half-life of linoleic acid in human tissue is approximately 600 days, meaning it can take several years of consistent dietary changes to fully alter the body's fatty acid composition.

Consumers can make a positive impact by:

1. Supporting small regenerative farms: These farms often prioritize traditional feeding practices that result in higher-quality, more digestible food.

2. Investing in quality over quantity: While low-PUFA or organic products may have a higher shelf price, they are often more nutrient-dense, which can reduce the need for expensive supplements and healthcare costs over time.
3. Focusing on one change at a time: It is not necessary to be a perfect consumer immediately; starting with a staple item like eggs or milk can lead to significant compounding benefits.

By becoming more conscious of food sourcing and understanding the industrial history of modern ingredients, individuals can take meaningful steps toward restoring their metabolic vitality and supporting a more sustainable food system.